Accelerated ART roll-out: an investigation on the potential impact for SA life assurers

By ML Strydom, DJ Corubolo and C Nel

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ABSTRACT
Our research investigates the impact of improved (and improving) mortality experience in South Africa (SA) as a result of the increased (and increasing) access to antiretroviral treatment (ART) on SA life assurers, the entry-level insurance market and the wider SA economy. The research focuses on various potential impacts on the entry-level insurance market, including new business profitability, product development and pricing, market penetration and the potential for increased savings. Our research has been done with the assistance of four of the main SA life offices and also draws on the new THEMBISA AIDS model on which a working paper has been produced. We use the THEMBISA model to investigate the potential impact of alternative mortality scenarios on typical entry-level products within the industry where the scenarios have been based on actual current and proposed antiretroviral roll-out strategies by the Department of Health (DoH). Using a profit test model for entry-level market products we quantify potential improvements to profitability, potential premium reductions and benefit enhancements, and the potential for cash-back benefits and reinvestment under various mortality scenarios.

KEYWORDS
AIDS; HIV positive; CD4 count; ART; THEMBISA; entry-level policies; value of new business (VNB); cash-back benefits

CONTACT DETAILS
Marthinus Louwrens (Marius) Strydom, Tel: +27(0)21 913 2138; Email: ms97@mweb.co.za
Davy John Corubolo, University of Stellenbosch. Tel: +27(0)21 808 9252; Email: davy@sun.ac.za
Carike Nel, Tel: +27(0)21 427 5358; Email: canel@deloitte.co.za
1. **EXECUTIVE SUMMARY**

HIV/AIDS has had a significant impact on death rates in South Africa (peaking at 1.3% in 2006) with consequent economic impacts.

We argue that the SA insurance industry has played a significant role in supporting families in the entry-level market through the provision of funeral cover policies. We estimate that around R50bn has been paid out in death benefits over the past 15 years to the entry-level market, and that R20bn or 7% of total premiums in 2013 were for entry-level policies. The current estimated R200bn of sums assured for entry-level policies amounts to more than 3.5 times the 2013 gross household savings in SA.

After a slow response by the government to the epidemic, ART was rolled out aggressively from 2004, with the number of patients receiving ART in SA increasing from below 50 000 in 2004 to more than 2.3 million in 2013. Coinciding with the rollout of ART, life expectancy has increased from 54 years in 2003 (after falling from 62 years in 1994) to an estimated 61 years by 2012 and indications are that this trend will continue, helped by the recent announcement by the Minister of Health to provide ART to all adults with a CD4 count of less than 500 cells/μl.

Life insurers have also been beneficiaries of the improved mortality trend, reflected in positive mortality variances and basis changes in earnings over 2008–2013. New business margins have also improved (albeit with improved persistency) to record levels.

The government is committed to increasing its budget for ART, while at the same time the cost of ART is decreasing. These factors, together with an increased CD4 count threshold from January 2015, should lead to further mortality improvements in future.

Using the THEMBISA model, we have developed three mortality scenarios. Corresponding to our estimate of current mortality assumptions used by the insurance industry for pricing and reserving ('Conservative scenario'), a scenario based on current DoH policy ('Baseline scenario') and a scenario based on the new DoH policy ('CD4<500 scenario'), we calculate potential impacts of each of the scenarios on a typical funeral policy sold by insurers.

We find that new business margins are more than 60% higher under our 'Baseline' and 'CD4<500' scenarios than our 'Conservative' scenario, which is our best estimate of the current basis used by SA life offices. Alternatively, if new business margins are maintained, premiums could be reduced by 11% from current levels or sums assured could be increased by 29%, assuming no change in lapses.

We believe that if future mortality improvements were allowed for, this would provide insurers with the opportunity to offer enhanced benefits, including cash-backs, surrender values and premium waiver benefits. We calculate that with a 10% premium increase and without any change in lapse assumptions, 5-yearly cash-backs equal to 13 months’ premium could be offered or a surrender value equal to 30% of premiums paid to date under our ‘Baseline’ scenario. A premium waiver at age 60
could be offered at no extra cost and a premium holiday of up to four months could be offered (assuming a 60% take-up) under our Baseline scenario (no change in lapses assumed).

In a more benign AIDS risk environment, we believe that new and exciting policies could be on the cards for entry-level policyholders. We foresee an environment where there is a greater focus on post-sale underwriting (enhancing benefits for policyholders that exhibit better mortality experience than had originally been priced for, through cash-backs, surrender values, premium waivers, etc.) and an increased desire for entry-level policyholders to be underwritten.

We expect a meaningful increase in entry-level sums assured as such products are more aggressively marketed, post-sale underwriting is employed, incentives such as cash-backs and surrender values are offered and affordability increases (with the help of mortality and persistency improvements).

There is meaningful potential for penetration in the entry-level market to increase in the more benign mortality environment that we envision. Combining higher sums assured being offered and/or premiums reducing on existing sums assured with increased incentives to maintain policies in early years (cash-backs and surrender values) as well as increased marketing of such products, there is meaningful room for increasing cover within this market.

We estimate that the insurance gap in the entry-level market could reduce from 55% to 42% under our ‘Baseline’ scenario and further to 33% if lapses were to reduce by 20%, which would still leave them well ahead of lapses in the middle and affluent markets.

Persistency is notoriously low in the entry-level market, but we believe that the environment created by reduced AIDS and mortality risk, could help to turn this around. The main mechanism here would be in the form of product design changes such as cash-backs and surrender values after year 5, although increasing premium holidays could also have a cosmetic and real positive impact on lapses.

The introduction of policies that accrue a value in the form of cash-backs or surrender values could also have a positive impact on the sale of savings products in SA in particular and the SA savings rate in general. Premium reductions (as a result of improved mortality experience) could increase disposable income and cash-backs could provide windfall income, both of which could be reinvested in savings products. Introducing surrender values would create savings within funeral policies, which doesn’t exist at the moment, whilst premium waiver benefits would free up disposable income at later ages. Improved persistency would amplify all of these impacts, helping to boost savings within such policies to potentially greater than 15% of current gross household savings (and more than 75% of net household savings).

We believe that the entry-level space in SA is ripe for positive developments over the coming years. In addition to individuals in this space gaining access to greater cover, better value for money and a wider variety of products, we expect SA life offices to sustain high growth rates in this market space while maintaining margins and the
economy as a whole to benefit from higher savings, higher consumption and less financial hardship due to the death of bread winners.

2. INTRODUCTION

2.1 A History of AIDS and Mortality in South Africa

South Africa started to be exposed to AIDS during the 1980s with the first case of HIV reported in 1982, the first AIDS death in 1985 and according to McNeil, by 1990 an estimated 74,000–120,000 South Africans were living with HIV. During the 1990s the percentage of the SA population living with AIDS increased from 0.8% in 1990 to 4.3% in 1994 according to Similela and to 9.3% by 2001, according to StatsSA.

The increase in HIV/AIDS prevalence had the resultant impact of increasing deaths due to HIV/AIDS and therefore overall deaths in SA. Figure 1 below shows this increasing trend in death rate (number of deaths as a proportion of population) when looking at data from StatsSA as well as data from the Rapid Mortality Surveillance (RMS) Report. The SA death rate climbed steadily from 1997 and peaked in 2006 for both sources, with over 600,000 deaths during that year according to StatsSA.

The death rates from these sources are slightly different in earlier years and according to the RMS, the main difference between the death data from StatsSA and

![Figure 1 SA Death Rate 1997–2012](source: Mortality and causes of death in South Africa, 2011: Findings from death notification – StatsSA; 2011 Census – StatsSA; Rapid Mortality Surveillance Report, 2012 – Dorrington, Bradshaw, Laubscher)

2 A brief history of South Africa’s response to AIDS, March 2014: NP Similela & WDF Venter
3 Mid-year population estimates, 2009: StatsSA
5 2011 Census: StatsSA
6 Rapid Mortality Surveillance Report, 2012: Dorrington, Bradshaw, Laubscher
RMS is due to the definition of calendar year. The two sources show the same trend though.

By late 2005, according to McNeil, more than 5 million South Africans were living with AIDS, making SA the country with the highest HIV rates in the world. From 2006 onwards, both StatsSA and RMS data shows a decline in death rate, albeit still above the levels in previous years.

HIV/AIDS has had a meaningful impact on the SA economy, including on consumption, investment, government expenditure and exports. According to the BAMR\(^7\) in their 2012 study, disposable income in SA was as much as 1.3% lower due to the AIDS impact as compared to a non-AIDS environment in 2006 and this was maintained until 2011. Household savings were 0.7% lower in 2006 and 1.1% lower in 2011. The percentage of households in poverty had increased from 40.5% in 1996 to 46.7% in 2006, where the report\(^7\) estimates that it would have declined without AIDS. However by 2011, the report estimates a decline back down to 39.8%.

The Gini coefficient also increased from 0.60 to 0.66 from 1996 to 2006, but then recovered modestly to 0.63 by 2011. According to the research, AIDS caused turnover to grow at lower rate, input costs to increase at a higher rate, labour demand to grow at a lower rate and labour supply to increase at a lower rate. Further, the growth in the tax base was negatively affected, while government expenditure grew by more than would have been the case without AIDS, although the gaps were lower in 2011 than in 2006.

The AIDS epidemic has had a meaningful social impact in SA, negatively impacted households and had a detrimental impact on the economy. The situation could have been even worse had it not been for the positive contribution from the SA Government with its aggressive antiretroviral treatment (ART) roll-out (see Section 2.4), as well as from the SA life assurance industry.

### 2.2 The Role of SA Insurance Industry

The AIDS epidemic in SA has had a significant impact on especially the entry-level market in SA over the past two decades, with a meaningful increase in deaths and a reduction in life expectancy. The importance of providing for funerals and the loss of bread winners has put a large burden on the finances of entry-level families. From early on during the epidemic, the SA insurance industry has played a role in supporting entry-level families and helping to ease the financial burden on them during their time of need. However, the industry was unwilling to cover HIV positive individuals explicitly until the 2000s (see Section 2.8). Cover, up until that point, occurred implicitly through non-underwritten policies, like funeral cover as well as through employee benefits and group arrangements.

The contribution made by the industry can be assessed by looking at the number of policyholders and beneficiaries in the entry-level insurance market, and the extent

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\(^7\) Demographic and Socioeconomic Indicators to Measure the Impact of HIV and AIDS in South Africa, December 2012: Bureau of Market Research, University of South Africa
to which they have benefited from life assurance, especially funeral policies. Other than providing death cover for the policyholder (or premium payer), a funeral policy fulfils an important need in that it also provides cover for the policyholder’s family members (beneficiaries). We have considered below, the growth in exposure to entry-level insurance, the benefits paid out and the cover provided (Figure 2).

Over the 11 years from 2001 to 2012, the total premiums received by the SA life assurance industry from assistance business (defined prior to 2009 as policies with sums assured of R10,000 and below and thereafter sums assured of up to R18,000) has increased more than seven-fold to almost R5.5bn. However if one adds premiums received for funeral and other entry-level life assurance business including sums assured exceeding assistance business levels from Old Mutual, Metropolitan and Sanlam, the biggest insurers in this market in SA, the above figure of R5.5bn increases considerably. Our estimates, based on disclosed sales by the largest players in the market, answers to our questionnaires and discussions with management teams, suggest the total amount of entry-level premiums in SA in 2013 was between R19.5bn and R20.5bn.9 This equates to between 7% and 7.5% of the total insurance premiums in SA during the period.

The increase in assistance and larger funeral sum assured business could have been driven by individuals shifting from informal burial societies to more formal insurance. According to FinMark Trust’s FinScope South Africa studies,10 the proportion of South Africans that have some form of funeral cover doubled from 39% in 2004 to 77% in 2012, with the proportion receiving their funeral cover from formal

**Figure 2** Total Industry Premiums for Assistance Business (Rm)

Source: Annual Reports of the Registrar of Long-term Insurance8

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9 Estimate based on company financial statements. Data provided by participants with pro-rata adjustment after referencing Assistance Business figures from FSB Annual Reports 2007–2011
10 Data from FinScope Studies, 2004 to 2012: FinMark Trust; Proprietary FinScope data analysed by researchers
sources (insurers, banks, undertakers and funeral homes), increasing from 24% to 51% over the same period.

We estimate that the SA life assurance industry has paid out around R50bn\(^9\) in death benefits over the past 15 years to the entry-level market. This is more than 10% of the total gross household savings in SA over the same period,\(^11\) which is impressive. As at the end of 2013, we estimate that entry-level policies in SA had a combined sum assured close to R200bn, covering an estimated 5.6 million primary and an estimated 9.5 million secondary lives.\(^9\) We estimate that the current sum assured in this market space amounts to between 19% and 27% of the household income for individuals in the entry-level market (depending if a definition of R15 000 pm or R20 000 pm is used).\(^9,12,5\) The current estimated sum assured in the entry-level space amounts to more than 3.5 times the gross household savings in SA in 2013 of R56bn.\(^11\)

### 2.3 ART in SA – A Tale of Two Strategies

During the early part of the development of the AIDS epidemic in SA, there was a much greater focus on prevention rather than treatment by Government. Similela\(^2\) discusses the focus on provision of condoms and a ‘safe-sex’ education strategy during the 1980s and 1990s as well as the controversies surrounding the Sarafina II play and the Virodene scandal that hampered these efforts. Similela also mentions the delays in the roll-out of ART, with Government opting for a phased piloting approach. It was only when the policy was challenged in the High Court and the Minister of Health appealed the High Court ruling to the Constitutional Court that the Department of Health (DoH) commissioned a Health Systems Trust report which stated that ”There are no good reasons for delaying a phased expansion of Prevention of Mother to Child Transmission (PMTCT) services in all provinces”, and recommended that “Nevirapine can and should be provided immediately”. This was followed by the Gauteng and KwaZulu-Natal provinces breaking ranks with the Minister and expanding their pilot programmes and the eventual loss of the Minister’s appeal to the Constitutional Court. Similela further discusses a statement released by Cabinet in April 2002 where it “reiterated government’s commitment to the HIV & AIDS and STI Strategic Plan for South Africa, 2000–2005” and affirmed that “government’s starting point is based on the premise that HIV causes AIDS”. This ushered in a change in ART strategy in SA with the first step being a Joint Health and Treasury Task Team to “propose options for expanding the HIV treatment response beyond PMTCT and post-exposure prophylaxis”.

After receiving the report of the Joint Task Team in August 2003, in November 2003 the Operational Plan for Comprehensive HIV and AIDS Care, Management and Treatment for South Africa was presented to and approved by Cabinet, and was followed by ART initiation beginning at several service points across the country on 1 April 2004.

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12 Statistician General’s results launch presentation, 2011 Census: StatsSA
Figure 3 shows the aggressive increase in the number of patients receiving ART in SA from <50,000 in 2004 to almost 1.8 million in 2011. As mentioned by Similela, in 2012, a decision was made to increase the initiation threshold to 350 cells/µl for all adults, as well as to expand access thresholds for children. Early paediatric treatment was first introduced in April 2010 and age thresholds have been extended twice since. By mid-2013, 6.4 million people were estimated to be living with HIV in SA, with an estimated 2.3 million on ART, and expanded access to ‘third-line’ drugs for patients experiencing resistance. During his 2014/2015 Health Budget Vote Speech, the Minister of Health announced the decision that from January 2015, HIV positive patients will be eligible for ART once CD4 count falls below 500 cells/µl compared with the previous level of 350 cells/µl.

2.4 Meaningful Mortality Reversal since 2005

Life expectancy showed a sharp decline from 1994 to 2006 as a result of the AIDS epidemic. According to the ASSA2008 model, total population life expectancy had fallen to 54 years by 2003 (from 62 in 1994) and remained there until 2005. Since then, life expectancy has improved meaningfully with the help of the aggressive roll-out of ARTs. According to ASSA2008, which was published in 2011, life expectancy would have improved to 58 years by 2012. However, using more up-to-date data from the Rapid Mortality Surveillance Report (RMS) of 2012, the increase is even more pronounced with total population life expectancy in 2012 estimated at 61.3 years. While general advances in medical technology and greater access to medical facilities in general would have contributed to this improvement, we believe that accelerated

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14 Health Budget Vote Speech by the Minister of Health, Dr Aaron Motsoaledi, MP, July 2014
15 ASSA AIDS and Demographic Model, March 2011: ASSA
ART roll-out is a significant driver. Indications are that life expectancy has improved even further since 2012, especially in the light of the DoH change in CD4 count threshold in 2011 to 350 cells/μl and could increase even further following the recent change in the CD4 count threshold to 500 cells/μl (effective January 2015).

### 2.5 Impact on Life Assurers and Their Policyholders

During most of the 2000 to 2013 period, the SA life assurance industry experienced a period of strong mortality profits manifesting in higher IFRS earnings and positive embedded value (EV) experience variances. Much of this experience, especially in the earlier years, was as a result of improved life expectancy in the middle and affluent markets, which is consistent with the experience in much of the developed world. However, during the latter part of the period, the entry-level market also contributed to this trend due to increases in life expectancy.

Using publicly available information, we illustrate in Table 1 that for five of the main companies in the SA insurance industry, the sum of mortality (and morbidity in some cases) experience variances plus mortality (and morbidity in some cases) basis changes as a percentage of starting embedded value averaged between 0.7% and 2.6% over the period from 2008 to 2013.

When we consider the publicly available information that focuses more directly on the entry-level market, a similar trend emerges with mortality experience variances plus mortality basis changes as a percentage of starting embedded value of between 1% and 3% from 2008 to 2013.

Questionnaires completed by the major life offices (see Section 3.3) confirmed that positive mortality experience variances have been achieved in the entry-level market over recent years. Although much of the mortality profits were earned in the middle-market and affluent space, there has also been a strong trend in the entry-level space. Most of the companies surveyed confirmed an improving trend since 2006,
which has tapered off in recent years, largely due to a weakening of mortality basis. Although this corresponds to the period of accelerated ART roll-out, companies have not seen any evidence of causality.

**Table 1** Mortality* experience variance and basis change as a % of starting embedded value

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company 1</td>
<td>3.2%</td>
<td>1.4%</td>
<td>1.1%</td>
<td>3.0%</td>
<td>1.3%</td>
<td></td>
</tr>
<tr>
<td>Company 2</td>
<td>0.4%</td>
<td>0.8%</td>
<td>1.2%</td>
<td>1.4%</td>
<td>1.8%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Company 3</td>
<td>0.9%</td>
<td>1.0%</td>
<td>1.1%</td>
<td>1.8%</td>
<td>1.2%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Company 4</td>
<td>4.6%</td>
<td>1.6%</td>
<td>−0.6%</td>
<td>−0.2%</td>
<td>2.0%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Company 5</td>
<td>0.2%</td>
<td>2.1%</td>
<td>0.5%</td>
<td>0.3%</td>
<td>5.0%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Average</td>
<td>1.5%</td>
<td>1.7%</td>
<td>0.7%</td>
<td>0.9%</td>
<td>2.6%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

Source: Published company financial statements; *In some cases, this includes morbidity as well.

The improved mortality experience for SA insurers over recent years has allowed these companies to pass benefits to policyholders.

All the companies surveyed have to some extent allowed for improved mortality experience in their reserving basis, but none of them have taken account of any future improvements due to the accelerated roll-out of ARTs in reserving for entry-level products (the exception being annuity business). All companies conduct mortality experience investigations annually for their entry-level businesses.

None of the companies allow for expected future mortality improvements in pricing for life assurance in the entry-level space although regular cover reviews are typically undertaken (e.g. every five years).

An interesting element in the feedback provided is that persistency experience is mostly more important than mortality when it comes to margins within the in-force book. Improved pricing of new business therefore often means that churn on the existing book leaves it with lower margins in an improving mortality environment than may be expected.

When it comes to the mechanism for dealing with improved mortality experience, there was a mix in response with some companies indicating that it would likely all be passed to policyholders, while others favoured profit enhancements.

### 2.6 ART Rollout Considerations

Over the past decade, there have been a number of developments on the ART front, including types of drugs offered, cost of treatment, budgets and attitudes.

From 2004 to 2010, ART drugs such as d4T, AZT, 3TC, EFV or NVP were used

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by the DoH in SA for the treatment of HIV positive patients. From 2010 to 2013, TDF was also introduced. A big change occurred in 2013 when a fixed-dose combination of TDF/FTC/EFV (FDC) was introduced in all newly initiated patients. This development was significant from an adherence, efficacy and cost point of view. According to an advice document by Davies, there are numerous advantages to FDC. Davies mentions that regimen and stock management has been simplified, some studies have shown improved adherence levels, the efficacy of TDF/FTC/EFV-based triple ART has been proven in randomised controlled trials, and the SA Government negotiated a reduced cost of R89.37 per patient per month for the FDC treatment in 2012, which represents a significant cost-saving compared with the old, single drug tender.

The cost savings that are likely with the new FDC are on top of savings that have already been delivered with the 2010 and 2008 tender. Table 2 highlights the average first line cost of therapy per adult patient per year for the 2008, 2010 and 2012 tenders, with specific focus on the drug cost element.

### Table 2 Average cost of first-line therapy per patient year 2008, 2010, 2012

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost [2011 ZAR]</th>
<th>% of total cost</th>
<th>% change to last tender</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008 tender (including OSD from August 2009)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average first-line cost</td>
<td>5 617</td>
<td>58%</td>
<td></td>
</tr>
<tr>
<td>— of which drug cost</td>
<td>2 530</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010 tender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average first-line cost</td>
<td>5 303</td>
<td>51%</td>
<td>-6%</td>
</tr>
<tr>
<td>— of which drug cost</td>
<td>2 216</td>
<td></td>
<td>-12%</td>
</tr>
<tr>
<td>2012 tender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average first-line cost</td>
<td>4 334</td>
<td>22%</td>
<td>-18%</td>
</tr>
<tr>
<td>— of which drug cost</td>
<td>956</td>
<td></td>
<td>-57%</td>
</tr>
</tbody>
</table>

Source: National ART Cost Model (NACM), Health Economics and Epidemiology Research Office (HE²RO), University of Witwatersrand/Boston University

17 Fixed-dose combination for adults accessing antiretroviral therapy, 2013: Davies
19 Antiretroviral regimen complexity, self-reported adherence, and HIV patients’ understanding of their regimens: Survey of Women in HER Study, 2001: Stone, Hogan et al.
20 Factors affecting adherence to antiretroviral therapy, 2000: Chesney
21 Tenofovir disoproxil fumarate, emtricitabine, and efavirenz versus fixed-dose zidovudine/lamivudine and efavirenz in antiretroviral-naive patients, 2006: Pozniak, Gallant, et al.
22 Tenofovir DF, emtricitabine and efavirenz vs. zidovudine, lamivudine, and efavirenz for HIV, 2006: Gallant, DeJesus et al.
24 Statement issued by the Minister of Health Dr Aaron Motsoaledi during the announcement of the new ARV tender ahead of the World AIDS Day.
Over the period, the cost of therapy reduced by 23%, while drug costs declined by more than 60%. The large reductions in the 2010 and 2012 tenders were supported by a decision to open the tender to international competitors who produce in SA, after work done by the Clinton Health Access Initiative, the DoH and HE²RO.25 ART suppliers now include Sonke, Adcock Ingram, Aurobindo, DPR, Pharmacare, Medivision, Specpharm and Winthrop. The tender is renewed every two years and the next renewal will be in 2014 which, if history is a measure, could lead to further drug price reductions, although there is no evidence of this yet.

In addition to the reducing cost of ART (especially drug cost), the SA Government has increased spend and is committing increasing amounts for ARTs going forward. Figure 5 considers the actual spent national and provincial HIV/AIDS budgets from 2006/2007 to 2012/2013 and the budgeted amounts until 2016/2017.

Over the period from 2006/2007 to 2013/2014, the HIV/AIDS budget increased almost five-fold from R2bn to R9.7bn. This is budgeted to increase to over R17bn over the next four years at an average growth rate of 15.2%, well above inflation.

The ART drug cost reductions (delivered and potential), combined with budget increases, should allow the DoH to continue to increase its ART roll-out even further over coming years, which is likely to have a further positive impact on mortality and life expectancy in SA. The following section looks at the areas where roll-out could become more aggressive.

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**Figure 5** SA HIV/AIDS budget (Rbn)

*Source: Estimates of National Expenditure – 2014; CEGAA review of health and AIDS spending – 2012; Authors’ calculations*

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25 Health Economics and Epidemiology Research Office (HE²RO), University of Witwatersrand/Boston University
2.7 The Potential for ART Roll-Out to become More Aggressive

Following the introduction of ART provision in earnest in 2004, the number of patients receiving ART has increased significantly. An important shift in provision occurred in 2011, when the decisions were made to change the eligibility criteria for the receipt of treatment from a CD4 count of 200 cells/μl to 350 cells/μl for all adults, as well as to expand access. In the National Strategic Plan (NSP) on HIV, STIs and TB 2012–2016 a number of strategic objectives were highlighted, including:

1. **Strategic Objective 1** Address social and structural drivers of HIV and TB prevention, care and impact;
2. **Strategic Objective 2** Prevent new HIV, STI and TB infections;
3. **Strategic Objective 3** Sustain health and wellness;
4. **Strategic Objective 4** Ensure protection of human rights and improve access to justice.

Strategic Objective 2 and 3 are of particular interest as they have the potential of further reducing death rates due to HIV/AIDS and increase life expectancy within SA. Some of the interesting topics discussed are:

- Increased roll-out of HIV testing and TB screening, including the possibility of introducing home-based CD4 count testing;
- Reduction of mother to child HIV transmission to 2% at 6 weeks and 5% at 18 months by 2016;
- Prepare for the implementation of future innovative, scientifically proven HIV, STI and TB prevention strategies. Further work is being done on:
  - The provision of pre-exposure prophylaxis (PrEP) to men who have sex with men (MSM);
  - The provision of oral PrEP for key populations who would benefit, such as discordant couples;
  - The provision of microbicides (topical PrEP) to women at risk (of HIV and HSV-2) in the general population;
  - The provision of PrEP in circumstances other than occupational exposure and post-sexual assault;
  - Using ART as prevention; and
  - New TB vaccines.
- Provide universal access to HIV and TB screening, diagnosis, care and treatment, including:
  - Annual testing;
  - Targeted screening programmes for key population groups, including sex workers, MSM, drug and heavy alcohol users, correctional and detention facilities and workplaces;
  - Encourage all health workers to facilitate early diagnosis;

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26 National Strategic Plan on HIV, STIs and TB, 2012–2016
— Ensure adequate supply of affordable antiretrovirals, STI and TB drugs;
— Ensure the earliest possible enrolment and universal access to appropriate treatment; and
— Initiate all HIV positive TB patients on lifelong ART, irrespective of CD4 count;
— Ensure that people living with HIV, STIs and TB remain within the healthcare system; and
— Ensure that systems and services remain responsive of the needs of people living with HIV, STIs and TB.

We believe that even if only half of the strategies listed above were to be successfully implemented, the potential is great for further mortality reduction and increased life expectancy.

The DoH’s track record in delivering on its targets is very good, especially if we consider the targets set out in the National Strategic Plan (NSP) for 2007–2011.27 One of the key targets in this NSP was to achieve new ART enrolment numbers equal to 80% of the number of newly eligible individuals in each year, by 2011. According to Johnson,1 the number of adults starting ART in 2010/2011 was well in excess of the 80% target. In fact, according to Johnson,13 the ratio of the number of adults starting ART over the period from mid-2010 to mid-2011, whose CD4 count fell below the CD4 count threshold, relative to the number of newly eligible individuals, was 1.64 when the CD4 count was 200 cells/μl and 1.56 when the threshold was 350 cells/μl.

An additional development that supports our view that further mortality reduction and increased life expectancy is likely in SA, is the recent decision by the DoH to increase the eligibility criteria for the receipt of treatment even further from a CD4 count of 350 cells/μl to 500 cells/μl for all adults.14

2.8 The Insurability of HIV in South Africa

During the past 20 years, corresponding to the development of the HIV/AIDS epidemic in SA, there was some initial resistance amongst SA insurers to providing cover to HIV positive individuals in the retail insurance market. Insurers offered limited cover through funeral products and reduced their risk of antiselection by offering higher levels of cover through employee benefit and group schemes. Since April 2007 life offices in South Africa no longer apply HIV/AIDS exclusions to life and disability policies following a best practice recommendation by the Life Offices Association28 to its member offices to waive existing HIV/AIDS exclusions for all lump sum death and disability benefit claims submitted from 1 April 2007. Exclusions can however apply in instances of material non-disclosure.29 Metropolitan Life began offering cover to

27 National Strategic Plan on HIV, STIs and TB, 2007–2011
28 The LOA is now known as ASISA, the Association for Savings & Investment SA
29 Life insurers to waive existing HIV/AIDS exclusions, March 2007: FA News
HIV positive individuals in 1996, and smaller SA insurance companies like Altrisk and AllLife offered risk cover to HIV positive individuals from 1999, but it was only recently that larger companies such as Liberty, Sanlam and Old Mutual started offering less restrictive and more affordable cover. Sanlam was the first major local life insurer to offer standard life cover not requiring proof of ongoing adherence to treatment by people living with HIV in August 2013 followed by Liberty and Old Mutual in the same year. Cover was extended to include severe illness and disability.

In their presentation to ICA2014, Sarkin et al. (2014) explored the “Insurability and Survival of Lives Living with HIV and Other Chronic Diseases”. The authors compare the survival and mortality of subgroups of HIV-infected lives and lives with other chronic conditions requiring lifelong treatment, e.g. Type 2 diabetes. They estimate and compare the mortality of HIV-infected South African adults initiating ART with that of South African adults initiating therapy for Type 2 diabetes and a control group in a large cohort of privately insured South Africans with long follow-up time to assess the hypothesis that there exist insurable subgroups of HIV-infected South African adults on ART.

The authors estimate adjusted (controlling for covariates) relative mortality risk between HIV subgroups and an appropriate control cohort according to, inter-alia, the current CD4 count, current viral load, current age, duration since ART initiation, baseline CD4 count, baseline viral load, gender and population group. For the purpose of the presentation, relative risk estimates were shown for HIV subgroups that were stratified by current CD4 count, current viral load, baseline CD4 and duration since ART initiation. All other covariates assumed values defined by the multivariate model reference group. Relative risk was lowest for patients with current CD4 counts ≥ 200 cells/μl and current viral loads ≤ 400 copies/ml (best subgroup) and highest for those with current CD4 counts <200 cells/μl and current viral loads >400 copies/ml (worst subgroup).

The relative risk of the worst subgroup exceeded the extra mortality threshold commonly used by underwriters when rating sub-standard lives (5 times standard rates) regardless of the baseline CD4 count and time since ART initiation. The relative risk of the best subgroup remained well below the threshold, reducing with increasing time since ART initiation and levelling off after three to four years since ART initiation. The effect of the baseline CD4 count was a penalty for lower baseline CD4 counts that waned over time for the best subgroup and appeared significant only within the first three years since ART initiation. Two other subgroups (CD4 count ≥ 200 cells/μl; viral load > 400 copies/ml and CD4 count <200 cells/μl; viral load ≤ 400 copies/ml) were shown to have higher relative risk than the best subgroup but remained below the underwriting threshold. The level at which relative risk levelled off for the best subgroup was sensitive

31 Better life cover for those with HIV, December 2013: Personal Finance
32 Insurability and Survival of Lives Living with HIV and Other Chronic Disease, April 2014 presentation to ICA2014: Sarkin et al.
to the population group. The study population represented employed individuals on medical schemes, who are considered a reasonable proxy for insured lives. The study had longer follow up times and patient numbers than are often found in the literature. A detailed account of their results is expected to be published soon.

We believe that the research of Sarkin et al. (2014) provides strong support for changes on the SA product development front. We believe that based on their research, there is increased room to provide standard (albeit loaded) policies to HIV positive individuals. We also believe that this research supports our view that there is increased room for post-sale underwriting in the entry-level space (enhancing benefits for policyholders that exhibit better mortality experience than had originally been priced for), which could share the benefits of potential improved mortality and life expectancy between insurers and policyholders over time (explored further in section 5.1).

3. RESEARCH METHODOLOGY AND MODELLING

3.1 Modelling Alternative Mortality Scenarios

In a recent working paper, Johnson33 introduced the THEMBISA integrated demographic and epidemiological model of the SA HIV/AIDS epidemic. In his research, Johnson refers to the shortcomings of the two most widely used AIDS models in SA, namely the Spectrum/EPP model34 and the ASSA2008 model.15

According to Johnson, both models have been regularly updated as new HIV prevalence data have been published and as scientific understanding of HIV has advanced. The Spectrum/EPP model is used in producing the UNAIDS estimates of the global distribution of HIV, and therefore has the advantage of benefiting from a substantial body of international expertise in HIV epidemiology. However, the separation of the modelling of HIV incidence and demographic impact in this model does limit the ability of the model to make use of age-specific data in model calibration, and the Spectrum model is also limited in its ability to evaluate the impact of HIV prevention strategies and make long-term projections.

According to Johnson, the ASSA2008 model has the advantage of being a fully-integrated demographic and epidemiological model, and the Excel interface of the publicly-available model is appealing to many non-modellers. However, several significant problems have emerged in recent years. The model assumes that ART initiation can occur only at the time of the first AIDS-defining illness, though guidelines have changed in recent years to recommend ART initiation at earlier stages of disease, and there is increasing interest in early ART initiation as an HIV prevention strategy (World Health Organization, 2013).35 The model also does not make allowance for a number of other new prevention strategies that are of interest, such as medical male

33 THEMBISA version 1.0: A model for evaluating the impact of HIV/AIDS in South Africa, February 2014: Johnson
34 Spectrum/EPP model, 2012: Stover et al.
35 Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection: Recommendations for a public health approach, 2013: World Health Organization
circumcision, pre-exposure prophylaxis and WHO options B and B+ for PMTCT. The model is based on a clinical staging system for HIV disease, though a CD4 count staging system would be more useful for the purpose of quantifying the unmet treatment need. There is also concern that the assumptions regarding sexual behaviour may be unrealistic, with more than half the sexually active population classified as “not at risk of infection” and no allowance for movement between risk groups over time. Lastly, the model allows for mother-to-child transmission only from those mothers who are HIV positive in early pregnancy, and ignores the substantial transmission risk that occurs if the mother acquires HIV in late pregnancy or while breastfeeding – this can lead to the incidence of HIV in children being substantially under-estimated. In light of these limitations, the AIDS Committee of the Actuarial Society of South Africa (ASSA) has issued a cautionary note regarding the most recently-released ASSA model, ASSA2008, noting that the recent estimates of AIDS mortality and mother-to-child transmission are problematic. The ASSA2008 model is based only on data published up to 2008, and the model therefore does not reflect new HIV prevalence and mortality data.

Johnson states that these limitations have been addressed in recent modelling work by the University of Cape Town (UCT), independent of the ASSA model. For example, the STI-HIV Interaction model is based on a more realistic model of sexual behaviour, which is calibrated to marriage data and cross-sectional data on numbers of partners (Johnson et al., 2009b). The UCT paediatric HIV model includes more detail in modelling the determinants of mother-to-child transmission, and considers most of the new strategies for preventing and treating paediatric HIV (Johnson et al., 2012d; Johnson et al., 2012a). The NSP ART Need model is based on a CD4 count staging system and allows for ART initiation in earlier stages of HIV disease (Johnson 2012). However, these individual models do not provide an integrated framework for comprehensively evaluating the spread of HIV in South Africa and its demographic impact, or for evaluating the range of HIV prevention strategies currently being considered by policymakers.

According to Johnson there is thus a need for a new South African HIV model, which can fulfil the same functions as the ASSA model while overcoming its limitations. He aims to achieve this by integrating the key features of the four previously-described models (the ASSA model, the STI-HIV Interaction model, the UCT Paediatric HIV model and the NSP ART Need model) into a new model, called THEMBISA. In the Xhosa and Zulu languages of South Africa, this means ‘give hope’ or ‘promise’, which reflects the new sense of optimism regarding South Africa’s commitment to HIV prevention and treatment, following a history of controversial leadership.

The objective of Johnson’s working paper is to provide a comprehensive description of the THEMBISA model assumptions and to present the basic model results up to 2012.
Preliminary estimates from the THEMBISA model point towards a more marked reduction in AIDS deaths since 2005 than shown in either the ASSA2008 or the Spectrum/EPP South Africa models, with which a comparison was drawn in the working paper. Figure 6 highlights that by 2011, the annual death estimate from the THEMBISA model is the lowest of the three models and that this trend continues in 2012.

In our research, we have used the THEMBISA model to generate alternative mortality assumptions, based on different ART roll-out scenarios. We have generated three scenarios, namely a Baseline scenario, a CD4<500 scenario based on a more aggressive roll-out of ARTs, and a Conservative scenario:

— The Baseline scenario is based on the current Government policy (until January 2015), which provides ARTs to all adults who have a CD4 count of 350 cells/μl.
— The CD4<500 scenario allows for the roll-out to be expanded to include all adults with CD4 count of 500 cells/μl, which is the Government policy to be introduced from January 2015.
— The Conservative scenario is our estimate of the current basis being used by the SA life insurance industry for pricing and reserving. The main differences between this and the Baseline scenario are:
  — a more conservative estimate of the future delay between diagnosis and ART initiation (12 months instead of six months, for individuals who have CD4 <200 at diagnosis);
  — higher mortality at longer ART durations (doubling the default HIV-related mortality assumptions for adults who have been on ART for more than four years); and
  — No allowance for mortality improvements after December 2013 to be consistent with the approach followed by life offices when reserving and pricing for non-annuity products.

Figure 6 Model estimates of annual AIDS deaths
Source: ASSA AIDS and Demographic Model; THEMBISA version 1.0: A model for evaluating the impact of HIV/AIDS in South Africa; Spectrum/EPP South Africa: UNAIDS
We have tested the Conservative scenario with the life offices that participated in our research and received mixed responses, with some companies considering it to be “ball-park”, some considering the rates higher than their assumptions at certain ages and others lower. On balance, based on the feedback that we received, we consider these rates to be an appropriate starting point for our analysis.

In Figure 7, we have compared the combined life expectancy (males and females) that we have derived from the different mortality scenarios that we use in our modelling. Note that in the case of the Conservative scenario, we have not allowed for any mortality improvements post-2013 to be consistent with the approach that most SA life offices use in pricing and reserving for entry-level policies (excluding annuities).

Although the Conservative, Baseline and CD4 <500 cells/μl scenarios start off with lower life expectancies than the ASSA2008 model in 2005, a cross-over occurs in 2011 and from there on, the gap in life expectancy between these models consistently increase. For example, by 2023, the Baseline scenario predicts an increase in life expectancy to 64.4 years compared with 58.9 years under ASSA2008 and 59.6 years under our Conservative scenario. By 2033, the Baseline scenario predicts an increase in life expectancy to 66.0 years, with the more aggressive CD4<500 scenario predicting a life expectancy of 66.4 years. The difference between the Baseline and the CD4<500 scenario is fairly small and driven more by the reduced infectiousness of the population under the CD4<500 scenario than lower mortality experienced by HIV positive individuals. In our opinion, the recent change in CD4 count eligibility threshold, further increases the conservatism in our analysis.

![Figure 7 SA combined life expectancy](source: ASSA AIDS and Demographic Model; THEMIBSA version 1.0: A model for evaluating the impact of HIV/AIDS in South Africa; Modelling by researchers)
3.2 Modelling Funeral Business under Alternative Mortality Scenarios

In order to test the impact of the alternative mortality scenarios discussed in the previous section, we have developed a basic cashflow projection model (using Prophet software) on which to do alternative runs. While the model does not try to replicate the entire SA entry-level market due to the limited information available to us, it does aim to create a model portfolio that can provide an indication of how alternative mortality scenarios could impact different areas of typical funeral business. Please see Annexure A for the model assumptions. We have done runs to consider the impact on metrics relevant to a tranche of new business sold, including present value of new business premiums (PVNBP), value of new business (VNB) and new business margins (VNB/PVNBP). Further, we have applied the alternative mortality scenarios to an illustrative product development environment, where we consider different types of entry-level products, including products with aggressive cash-back benefits, funeral products with surrender values, products with premium waivers and products with premium holidays. We have investigated the relationship between mortality and persistency experience. Although we also considered an example in-force portfolio and looked at the impact on a number of metrics, we have not included our findings in detail due to difficulties in calibration with SA life offices. We hope to continue this exercise in future research with the assistance of the major SA life offices.

3.3 Questionnaire to Life Offices

In order to test a number of assumptions with regard to our modelling as well as to inform our discussions within the Conclusions and Recommendations section (Section 5), we utilised feedback from a detailed questionnaire that we provided to four of the main life offices that operate in the entry-level market that we have assessed.

The questionnaire focused on eight main themes that may be impacted by changes in mortality experience:

— Theme 1 Defining scope and market segment for which data and information will be provided
— Theme 2 Trends observed relating to demand for product
— Theme 3 Impact on product development and pricing
— Theme 4 Impact on market penetration and sales for risk products
— Theme 5 Impact on potential for increased savings and investments
— Theme 6 Ability of current systems and processes to deal with different product sets
— Theme 7 Impact on outside perception of life offices due to potential mortality improvements
— Theme 8 Successes in providing coverage and benefits and improvements passed through
4. MODEL RESULTS AND ANALYSIS

4.1 Introduction

As mentioned above, it was not possible with the limited information available to the researchers to create a portfolio of entry-level policies that could approach anything like a model office for the SA industry, although this remains an aim of the researchers, which may be pursued in future research.

We have attempted to generate a portfolio of new business policies with what we believe to be similar characteristics to the majority of business currently sold by insurers in the entry-level market. In particular, our portfolio was selected to have:

— An age, gender, dependants profile that we believe has similarities to that of the new business currently being sold in the SA entry-level funeral market;
— Average sum assured assumed similar to funeral business currently being sold in the market;
— Premiums similar to actual premium rates for new business in the market;
— In our Conservative scenario, mortality assumptions that appear reasonably consistent with what is currently used for pricing in the market and which does not allow for mortality improvements over time;
— Other assumptions, including lapses, expenses, commission, etc. that are in line with what is currently used in the market.

Our average risk profile (age, gender, number of dependants), average premiums and sums assured, and lapse and expense assumptions have been derived with some limited input from life offices (see Annexure A).

The researchers focused on the new business model that was constructed with the help of answers to our questionnaires, discussions with companies, publicly available information and our own assumptions. Our new business model has been used to consider the impact of alternative mortality scenarios on different aspects of new business, including PVNBP, VNB and with specific focus on new business margins. We have also used our new business model in later sections to explore product development changes that could occur in the SA entry-level space.

4.2 Impact of Alternative Mortality Scenarios on Example In-force Portfolio

Although the focus of this research has been on new business, we can share some broad results and conclusions from our in-force business model. Our runs indicate that mortality improvements towards the Baseline mortality scenario could lead to reductions in liabilities for a typical entry-level in-force book of policies, with increases in value of in-force business (VIF) and IFRS profit. This is an area for further research.

4.3 Impact of Alternative Mortality Scenarios on Example New Business Portfolio

We have created a typical entry-level funeral new business portfolio based on the assumptions highlighted in Annexure A, which generated new business results
that are broadly in line with what has been observed in published results over recent years. In particular, our model portfolio under our Conservative mortality scenario produces a new business margin of 8%, which is broadly in line with what Old Mutual Mass Foundation, Sanlam Entry-Level and Metropolitan Retail has published over recent years (see Figure 8). The margins for these companies may also include a savings element, which reduces the overall level compared to a risk-only margin.

We have done a number of runs on our new business model portfolio to assess the impact of more aggressive mortality scenarios on new business margin, premium levels and sum assured levels. We have also tested the outcomes under different lapse scenarios, including 50% higher lapses, 20% higher lapses, 20% lower lapses and 50% lower lapses at all durations. We outline the results below.

Table 3 highlights that under our current lapse scenario and our Conservative mortality scenario (Current scenario), our model portfolio of new business generates a new business margin of 8%. The table also shows the sensitivity of new business margin to lapse assumptions with margin rapidly declining to 3.7% when lapses are assumed to be 20% higher over all durations and turning negative if lapses are assumed to be 50% higher.

Importantly, the more aggressive mortality scenarios that we model have a very positive impact on the new business margins. Assuming no change in lapses, our modelling points to a 61% increase in new business margin to 12.7% under our Baseline mortality scenario. Under our CD4<500 scenario, the new business margin increase is closer to 64%. Interestingly, even with 20% higher lapses, our Baseline and CD4<500 scenarios still generate healthy new business margins (4% and 6% above the Conservative scenario). What we have noticed is that because of the importance of lapses in the earlier years, there is not a meaningful difference between the Baseline and the CD4<500 scenario and as a result, we exclude it from further discussion.
Table 3 New business margins under different mortality and lapse scenarios

<table>
<thead>
<tr>
<th>Lapses 50% lower</th>
<th>Conservative</th>
<th>Baseline</th>
<th>CD4 500 AIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lapses 20% lower</td>
<td>11.3%</td>
<td>16.4%</td>
<td>16.6%</td>
</tr>
<tr>
<td>Current lapses</td>
<td>7.9% (current)</td>
<td>12.7%</td>
<td>12.9%</td>
</tr>
<tr>
<td>Lapses 20% higher</td>
<td>3.7%</td>
<td>8.2%</td>
<td>8.4%</td>
</tr>
<tr>
<td>Lapses 50% higher</td>
<td>−4.2%</td>
<td>−0.1%</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

Source: Modelling by researchers

We recognise that it is unlikely that mortality improvements would simply be passed to shareholders as is implied by our analysis above. We have therefore also considered implications for an improved mortality scenario for premiums and sums assured.

Our modelling indicates that assuming no change in lapses, the average premium on our model portfolio could be lowered by 11% whilst maintaining new business margins under our Baseline mortality scenario (see Table 4). Even if lapses were 20% higher over all durations, a slightly lower office premium (1% lower) would be required to maintain new business margin under our Baseline scenario. If lapses were to decline, the premium reductions would be even more meaningful than 11%. We explore this further in the Conclusions and Recommendations section (Section 5).

Table 4 Office premiums (as a % of the current office premiums) under different mortality and lapse scenarios – new business margin static at 8%

<table>
<thead>
<tr>
<th>Lapses 50% higher</th>
<th>Conservative</th>
<th>Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lapses 20% higher</td>
<td>111%</td>
<td>99%</td>
</tr>
<tr>
<td>Current lapses</td>
<td>100% (current)</td>
<td>89%</td>
</tr>
<tr>
<td>Lapses 20% lower</td>
<td>93%</td>
<td>82%</td>
</tr>
<tr>
<td>Lapses 50% lower</td>
<td>86%</td>
<td>76%</td>
</tr>
</tbody>
</table>

Source: Modelling by researchers

We have done a similar analysis on the sum assured that could be offered to policyholders under different mortality and lapse assumptions.

Our modelling indicates that assuming no change in lapses, the average sum assured on our model portfolio could be increased by 29% whilst maintaining new business margins under our Baseline mortality scenario. Even if lapses were 20% higher at all durations, a 2% higher sum assured could be offered that would maintain new business margin under our Baseline scenario. If lapses were to decline, the sum assured increases would be even higher (see Table 5).
Table 5 Sums assured (as a % of current sum assured) under different mortality and lapse scenarios – new business margin static at 8%

<table>
<thead>
<tr>
<th></th>
<th>Conservative</th>
<th>Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lapses 50% higher</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>Lapses 20% higher</td>
<td>80%</td>
<td>102%</td>
</tr>
<tr>
<td>Current lapses</td>
<td>100% (current)</td>
<td>129%</td>
</tr>
<tr>
<td>Lapses 20% lower</td>
<td>116%</td>
<td>149%</td>
</tr>
<tr>
<td>Lapses 50% lower</td>
<td>130%</td>
<td>167%</td>
</tr>
</tbody>
</table>

Source: Modelling by researchers

In addition to sharing better mortality experience with policyholders through lower premiums and higher sums assured, we have also investigated the potential for using different policy designs to allow for these benefits to be passed across. We have considered four types of policies that could be introduced or more aggressively used in the entry-level space, including policies with:

1. Cash-backs after discreet in-force durations;
2. Surrender values after discreet in-force durations;
3. Premium waivers; and
4. Premium holidays.

We look at such policies in more detail in the sections below.

4.4 Impact of Alternative Mortality Scenarios on Example New Business Portfolio with Cash-back

To test the potential for policies with cash-backs in a more aggressive mortality scenario, we have created a portfolio of policies that under our Conservative Scenario generates a cash-back of 6-months premiums every five years. In order for such a policy to generate the same new business margin as under our portfolio without cash-back benefits, we have increased the average office premium of our portfolio by 10% from R2 160 p.a. to R2 376 p.a.

We then ran this portfolio of policies through different mortality and lapse assumptions and measured the number of monthly premiums that could be returned via a cash-back every five years, whilst maintaining the new business margin at 8%.

Our modelling shows that assuming no changes in lapses, under our Baseline mortality scenario, which allows for the current roll-out of ARTs to individuals with a CD4 count of less than 350 cells/μl (the policy until January 2015, when it will become more aggressive), a cash-back of 13 months’ premiums could be offered compared with the six months’ worth of premiums under the Conservative scenario (which is our estimate of the current mortality assumptions used in the SA entry-level market). See Table 6.
Table 6 Number of monthly premiums as cash-back every five years under different
totality and lapse scenarios – new business margin static at 8%

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Conservative</th>
<th>Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Lapses</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Lapses 20% lower (years 1 – 4)</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>Lapses 50% lower (years 1 – 4)</td>
<td>15</td>
<td>21</td>
</tr>
</tbody>
</table>

Source: Modelling by researchers

If lapses were to reduce in years 1 to 4 (which is possible if policyholders had the expectation of a cash-back benefit), our modelling shows that an even higher multiple of monthly premiums could be offered as a cash-back. A 20% reduction in years 1 to 4 lapses could increase the multiple of monthly premium in our portfolio to 17, while it could increase to 21 monthly premiums if lapses were to decline by 50% (which would put them more in line with the lapses on whole-life policies in the market).

4.5 Impact of Alternative Mortality Scenarios on Example New Business Portfolio with Surrender Values

Using the same approach as with cash-backs, we also created a portfolio of funeral policies that offers surrender values to test under different mortality and lapse scenarios. As a base, we have designed a portfolio of policies that offer a surrender value equal to 14% of premiums to date (provided the policy has been in-force for five years). In order for this portfolio to generate the same new business margins as our portfolio of policies without a surrender value, we increased the average office premium for the surrender value policies by 10% from R2 160 p.a. to R2 376 p.a. We also increased the lapse rate from year 5 onwards by 20% as we anticipate higher lapses if a surrender benefit is offered.

We then ran this portfolio of policies through different mortality and lapse assumptions and measured the percentage of premiums that could be offered as a surrender value, whilst maintaining the new business margin at 8% (Table 7).

Table 7 Surrender value percentage of premiums to date under different mortality and lapse scenarios – new business margin static at 8%

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Conservative</th>
<th>Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current lapses</td>
<td>14%</td>
<td>30%</td>
</tr>
<tr>
<td>Lapses 20% lower (years 1 – 4)</td>
<td>29%</td>
<td>45%</td>
</tr>
<tr>
<td>Lapses 50% lower (years 1 – 4)</td>
<td>40%</td>
<td>56%</td>
</tr>
</tbody>
</table>

Source: Modelling by researchers

Our modelling shows that assuming no changes in years 1 to 4 lapses, under our Baseline mortality scenario, surrender values of 30% of premiums paid to date could
be offered compared with the 14% of premiums under the Conservative scenario (an increase equal to 16% of premiums paid to date).

If lapses were to reduce in years 1 to 4 (which is possible if policyholders had the expectation of a surrender value), our modelling shows that an even higher proportion of premiums could be offered. A 20% reduction in years 1 to 4 lapses could increase the surrender value percentage to 45% (under our Baseline mortality scenario), while it could increase to 56% of premiums received to date if lapses were to decline by 50%.

4.6 Impact of Alternative Mortality Scenarios on Example New Business Portfolio with Premium Waiver

Our next example portfolio of policies looks at offering a premium waiver to policyholders that reach the age of 60, provided the policy has been in-force for at least five years. We designed a portfolio of policies with this feature and increased the average office premium on this portfolio by 8% from R2 160 p.a. to R2 333 p.a. to maintain the new business margin of this portfolio at 8%, in line with our portfolio of policies without a waiver benefit.

We then ran this portfolio of policies through different mortality and lapse assumptions and measured what level of office premium relative to the original office premium would be required to maintain the benefit (Table 8).

<table>
<thead>
<tr>
<th>Table 8 Office Premium (% of current office premium) for a waiver of premium benefit policy under different mortality and lapse scenarios – new business margin static at 8%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current lapses</td>
</tr>
<tr>
<td>Lapses 20% lower</td>
</tr>
<tr>
<td>Lapses 50% lower</td>
</tr>
</tbody>
</table>

Offering such a waiver of premium benefit, without any change to mortality or lapse assumptions, would require an 8% increase in office premium compared with a portfolio of policies without such a benefit, as discussed above. Under our Baseline mortality scenario, the benefit could be offered at a 4% lower premium compared with a portfolio without such a benefit, without impacting new business margin. If we allow for reduced lapses, the required premium is even lower and varies between a 10% and 15% reduction, depending on the extent of the lapse reduction and the mortality scenario used.

4.7 Impact of Alternative Mortality Scenarios on Example New Business Portfolio with Premium Holiday

The final example policy that we investigated was a policy that allows premium holidays to policyholders to avoid policies lapsing. We recognise that such a policy
may not be marketed aggressively, as companies would want to avoid overuse of this benefit from policyholders. However, such policies could help companies to reduce lapse rates and protect the interests of policyholders (giving them more time to resume premium contributions).

For our basic portfolio (see Section 4.3), we allow for 90% of premiums to be received across the board, which implies an average premium holiday of 1.2 months if all policyholders in our portfolio make use of it or a higher number of months if fewer policyholders miss premiums. We have measured the change in this percentage of premiums that could be possible under different mortality and lapse assumptions. However, it must be important to note that the exact number of months’ premium holiday that our model implies would be dependent on an assumption of what proportion of policyholders miss premiums. We consider a number of options below.

**Table 9** Implied Percentage of Total Office Premiums Received as Premium Holiday under Different Mortality and Lapse Scenarios – New business margin static at 8%

<table>
<thead>
<tr>
<th></th>
<th>Conservative</th>
<th>Baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current lapses</td>
<td>90% (current)</td>
<td>80%</td>
</tr>
<tr>
<td>Lapses 20% lower</td>
<td>84%</td>
<td>74%</td>
</tr>
<tr>
<td>Lapses 50% lower</td>
<td>77%</td>
<td>68%</td>
</tr>
</tbody>
</table>

Source: Modelling by Researchers

As discussed above, our **Conservative** scenario already allows for 10% of premiums to be missed without policies lapsing. Under our **Baseline** mortality scenario, this could increase to 20%, which amounts to 2.4 months if all policyholders skip premiums or four months if 60% of policyholders skip premiums. Such a policy development could have a positive impact on lapse rates from both a cosmetic and an actual point of view.

The definition of a lapse on a policy like this could be changed to reflect a policy that has missed five premiums compared to the typical current definition of two premiums missed. This should have a positive impact on the disclosed lapse rate of such policies.

Allowing policyholders to skip more premiums without lapsing should also afford them more time to resume premium payment after periods of difficulty, which could increase the actual persistency on the policy. Such a policy design could also afford life offices more opportunity to contact policyholders that have skipped premiums to encourage them to resume, although there would be additional cost associated with such a strategy, which could be prohibitive.
5. CONCLUSIONS AND RECOMMENDATIONS

5.1 New and Changed Products that could be on the Cards

It is our view that there is great potential for development in entry-level product sets in the light of improved and improving AIDS mortality experience. Currently, the entry-level market is dominated by funeral products, which are not underwritten, offer limited sums assured, have no surrender values and suffer from high lapse rates.

We believe that an improving mortality environment offers the opportunity for developments on all of these fronts.

5.1.1 Underwriting

It is the general view from insurers that operate in the entry-level market that policyholders in this space prefer not to be underwritten when they purchase policies. Although some policies may require a limited number of questions to be answered, detailed questionnaires, medical declarations and blood tests are rare in the funeral market.37

We believe that a continuing AIDS mortality improvement in the entry-level space could offer life offices an increased opportunity for post-sale underwriting, i.e. offering enhanced benefits to policyholders that exhibit better mortality experience than had been priced for in the original contract. The mechanism for such underwriting could be to pay cash-back benefits to policyholders that survive and don’t lapse, offer surrender values on funeral policies for policyholders that survive and don’t lapse for a given period (say five years), include a premium waiver benefit at retirement age (benefiting policyholders that survive to this age), allow for longer premium holidays or to enhance benefits for policyholders (either using a blanket or more targeted approach).

We also believe that in an environment of improving mortality, there could be the potential for more underwritten products to be sold, driven by steps on the side of life offices and changes in perception on the side of policyholders:

— We believe that because of the increased number of people living with HIV/AIDS being on ARTs and the resultant improved life expectancy, life offices may be more and more inclined to sell underwritten products to HIV positive lives; and
— With ART becoming more and more pervasive, the stigma surrounding HIV/AIDS may moderate, making individuals in the entry-level space more inclined to undergo underwriting.

Whether we see an increased trend towards post-sale underwriting in the entry-level market or whether we see more underwritten products sold in the entry-level market, this opens up the opportunity for meaningful shifts in the market.

37 Lower premiums on underwritten policies, April 2013 – Personal Finance
5.1.2 Level of Cover

Over the past two decades, there has been limited movement in the level of cover offered on the typical funeral policy, with this certainly not keeping track with inflation.

The feedback from the questionnaires answered by four of the largest players in the entry-level market in SA indicates that more than 75% of entry-level business still has sums assured of less than R20 000.

According to the respondents, demand for higher sum assured funeral products over recent years has either been slight or absent. In the current environment, they describe the demand for higher sum assured non-underwritten products as between low and medium, both from policyholders and intermediaries.

Most companies also believe that if higher sums assured were available at lower premiums in the entry-level market, policyholders would reduce premiums rather than increase sums assured so that overall premiums would reduce. Policyholders would spend less to cover their needs that are relatively stable and linked to funeral cost.

Companies assign limited elasticity to higher sums assured relative to premiums.

However, the lack of sum assured increases cannot only be ascribed to policyholders’ lack of demand, but also to the risk of fraud in the entry-level market, resulting in companies not wanting to significantly increase sums assured.

In an environment where mortality experience continues to improve and where AIDS is becoming a reduced hazard, it is our view that insurers could be more proactive in product design and pricing, by making some allowance for expected mortality improvements. We believe that there are six main hurdles to increased cover in the entry-level market becoming more prevalent, namely: availability/access; underwriting; insurance terms; limited incentives (e.g. surrender values or cashbacks); affordability; and risk of fraud. We will discuss them in turn.

While life offices offer policies with larger sums assured in the entry-level market, it is our opinion that such products are not marketed as aggressively as the traditional funeral policy. We believe that in the light of the improving mortality environment and the reduced risk of AIDS, innovative products could be marketed much more aggressively in the entry-level space. We believe that such increased marketing could help to create an increased demand for such products. We believe such an increased demand would be further aided by the decreased stigma associated with HIV/AIDS.

We have previously discussed the dislike in the entry-level market of underwriting and that, very often, to obtain higher sums assured (especially meaningfully higher sums assured), underwriting is required in the current environment. As discussed above, we believe that the improved mortality environment and the reduced risk of AIDS opens the door for increased post-sale underwriting and the reduced risk of selling policies with much higher sums assured without underwriting. In addition, even though not our base case, we also believe that the reduced stigma of HIV/AIDS could reduce the reticence to underwriting in this market. However, it is important not
to underestimate other factors that may contribute to the dislike of underwriting in this market, including having to fill in pages of forms and having to go for medical tests. To overcome such resistance, it is important that the benefits are clear and meaningful. A further issue to note is that additional underwriting will lead to additional expenses, although we believe that the increased efficiency in larger sum assured policies will likely make up for this. The researchers also acknowledge that traditional underwriting for a typical funeral policy (often covering numerous beneficiaries) may not be feasible due to the remoteness of some of these beneficiaries and the cost of medical underwriting tests. However, there may be scope to provide more traditional underwritten products in the entry-level market.

It is our opinion that one of the reasons that policyholders have not opted for higher sums assured with underwriting was due to the more penal terms that apply for HIV positive individuals. Although AIDS exclusions no longer apply on any policies, whether underwritten or not, it is our opinion that the perception surrounding this historical practice has not sufficiently changed, with many individuals remaining hesitant to undergo underwriting. Even though HIV positive exclusions do not exist anymore, significant loadings for HIV positive individuals are still applied (although the environment might be changing as highlighted in Section 2.8). We believe that in an environment of improved mortality and reduced risk of AIDS, there is room for relaxing these terms in most cases and, if loadings are applied, to allow mechanisms such as cash-backs and surrender values to allow HIV positive policyholders to obtain better value for money or at least a perception of better value for money. This is strongly backed up by recent research that we discussed in Section 2.8.

A further problem with most existing funeral policies is that it is perceived as a one-way bet. You buy the policy and if you die, it pays for your funeral. Through innovative policy design, such policies can cease to be a one-way bet, opening the door for them to be sold and marketed with higher sums assured and with benefits in addition to pure death cover. If policyholders see the value of such policies, not just if they were to die of AIDS, but also if they were to survive to a ripe old age, demand for higher sums assured could increase. Providing cash-backs on survival and offering surrender values on these policies could turn these products into a win-win proposition for policyholders. With the continuing mortality improvements that the researchers expect, it should become easier to provide such benefits, whilst maintaining margins.

Affordability in this space could be addressed by offering lower premiums to allow for improving mortality, and lower expense loadings as a result of higher potential volumes. In addition, life offices could increase the value that develops over time within policies through cash-backs, surrender values and premium waivers.

We recognise that fraud is an important issue in the entry-level market, but we believe that not providing or not aggressively marketing higher sums assured, although effective at controlling the risk, is not the only option that can be followed. We expect that companies would benefit much more by increased resources focused on investigating and monitoring fraud, while at the same time more aggressively...
developing and marketing higher sum assured products to participate in the longer-term upside that this would provide to penetration, new business volumes and profitability. It is our opinion that the entry-level market is ripe to help drive the growth of life assurance companies in areas other than funeral products.

5.1.3 Surrender Values and Cash-backs

As mentioned above, it is the opinion of the researchers that the typical funeral policy that dominates the entry-level market at the current time is a “one-way-bet” for policyholders and is perceived as such. It is generally accepted that there is insufficient exposure to savings products in the entry-level market and where they are available, they offer less than satisfactory value for money.

The feedback from our questionnaires indicate that reductions in yield (RIY) for SA entry-level savings policies vary between 2.4% (longest term) and 3.8% (shortest policy term).

This is high compared with the middle and affluent market. Our calculated RIY figures for an endowment wrapper investment policy on an investment platform from a large life company vary between 2% (longest term) and 2.3% (shortest policy term). It makes it very difficult in a low inflation environment to offer value for money when the RIY is a significant proportion of investment returns.

However, it is the opinion of the researchers that the environment created by improved mortality and the reduction in the risk of AIDS could create a significant opportunity to introduce a savings element to existing funeral policies at much more affordable levels than selling a free-standing savings policy.

We believe that two of the mechanisms that could achieve this goal are cash-backs on funeral policies and surrender values on funeral policies. We will discuss them in turn.

Because funeral policies are not underwritten, the assumed mortality experienced priced into such policies is generally very conservative. Poor expected persistency amongst such policies also contributes to higher premium rates. In an environment of improving mortality and the reduced risk of AIDS, it is likely that the basis used for pricing such business in the past, and even currently, is overly conservative and could lead to reserve releases.

Instead of using such reserve releases to boost profitability or cover within policies, companies could provide enhanced cash-back benefits on these policies. We recognise that some companies already provide cash-backs, and the feedback from some companies is that these are not great sellers. However we would suggest offering cash-backs that are much more aggressive than the current small multiple of premiums that some companies offer during the policy term, or the one third of premiums that other companies offer at maturity. We are suggesting offering higher cash-backs at earlier duration (for example every five years) funded from future expected mortality improvements, which could improve persistency and in turn allow insurers to further improve terms while maintaining acceptable profitability.
If cash-backs were to become more popular, we would suggest that companies make sure from the outset that they provide policyholders with alternative ways of employing their cash-backs other than using it for consumption. Even on a R20000 funeral policy, the 5- and 10-year cash-backs could be sizeable enough to be reinvested into single premium savings vehicles.

As we illustrated in Section 4.4, it would be possible to offer cash-backs of between 6-months and 21-months of office premium on policies with a 10% higher office premium than is currently offered under different mortality and lapse scenarios, without reducing new business margins. On our example portfolio of policies (which have a R2376 average annual office premium after allowing for the 10% premium increase and an average sum assured of R17750), this could imply an average lump-sum to policyholders of between R2574 and R4158 every five years under more aggressive mortality and lapse assumptions.

Some whole-of-life policies sold by life offices in SA offer a dual purpose to policyholders by providing cover in case of death and also a surrender value in times of need. The researchers believe that the typical funeral policy cannot fulfil this secondary role due to the absence of a surrender value. However, it is also the opinion of the researchers that the typical funeral policy is in essence not that much different from a whole-of-life policy in that the primary goal is to provide cover at death.

The main hurdles to offering surrender values on funeral policies are: low persistency, AIDS risk, and systems constraints/expenses. It is common knowledge that funeral policies in SA suffer from very low persistency rates, which makes it difficult to allow them to accrue surrender values whilst maintaining margins. It is the opinion of the researchers that persistency could be improved on these policies if there is more to lose by the policyholder upon cessation than currently. We believe that if funeral policies with surrender values were actively marketed and the benefits of sustaining the policy until it accrues a surrender value becomes clearer to policyholders, that there could be a positive impact on persistency rates at least at the early durations.

We have already discussed in detail the reduced AIDS risk in SA’s future based on our forecasts. It is our view that in an environment of lower AIDS risk, it would be easier to aggressively market policies that are more longer-term focused and do not only provide funeral cover for death. In such an environment, shifting focus to longer-term needs, which also includes savings, could be easier. This could allow a greater focus on marketing policies with surrender values.

To start selling funeral policies with surrender values or converting existing funeral policies to have surrender values poses challenges as far as systems go and is likely to add to expenses. However, all of the companies that we have considered do offer whole-of-life policies in addition to funeral policies and have the systems to deal with such policies. At the same time, we believe that the benefits that could be derived by both policyholders and insurers (through improved persistency), would warrant the additional expenses.
We have already shown in Section 4.5 that a surrender value of 14% of premiums to date could be introduced on our example portfolio of funeral policies by increasing office premium by 10%. We have further shown that in a more aggressive mortality scenario and under a lower lapse assumption (in years leading up to the surrender values first becoming payable), this surrender value could increase to between 30% and 56% of premiums paid to date. Based on our portfolio with an average sum assured of R17 750 and an average office premium of R2 376 p.a. (after a 10% increase to allow for a surrender value benefit), a surrender value of between R3 564 and R6 654 could start to accrue from year 5 onwards.

The benefits released to policyholders from our example cash-back policies and available to policyholders from our example surrender value policies, could create meaningful savings opportunities for policyholders in this space. In the case of a cash-back benefit, policyholders could receive regular sizeable lump sums, without forfeiting their life cover. Such amounts could be reinvested in other forms of savings or could be used to boost consumption. The even higher surrender values that could build up in our surrender value policies could be utilised for consumption, debt repayment or other expenditure in case of need or could be used later in life if there is a reduced need for life cover (reduced burden from dependants, etc.).

In both cases, there is the potential that persistency could improve amongst policyholders invested in such policies. It is possible that the expectation of a cash-back payment could reduce lapse rates in the run-up to the pay-out of such benefits, although they could again increase once the payment has been made. The build-up of a surrender value within a policy could reduce lapse rates during the first five years of a policy, say, if such surrender value only starts accruing after a particular policy anniversary (say five years). However, once a surrender value is available, it may have a negative impact on persistency, but this would be at later durations, which would be less of a problem for the entry-level space (high early lapses being the main concern).

5.2 A Case for Increased Penetration in the Entry-level Market

It is our view that a more benign mortality environment will lead to increased penetration levels in the entry-level market in SA. This increase in penetration could occur via various mechanisms, including:

- **The increase of sums assured** by life offices – most of the respondents to our questionnaire have indicated that they have already, or will in the future, enhance benefits to reflect lower mortality experience;

- **The reduction of premiums** by life offices – most of the respondents to our questionnaire have implemented some level of re-pricing in relation to new business in the entry-level space and have indicated that this will continue if mortality experience continues to improve – this allows more cover to be purchased for the same premium;

- **Cash-backs** on funeral policies – most of the respondents to our questionnaire already have cash-backs in place on some of their policies to encourage
persistency. Future mortality improvements may allow insurers to increase future cash-backs – the cash received by surviving policyholders could potentially find its way back into increased insurance purchases; and

— New products could increase demand for insurance – as discussed in the previous section, we believe that the aggressive promotion of policies with cash-backs, surrender values and premium waivers at retirement (discussed in Section 4.6) could increase the demand for product in the entry-level space and help to boost penetration.

An overarching consideration when it comes to the penetration levels in the entry-level space in SA is arguably marketing. Changes in products as discussed above are likely to have a limited impact on sales and penetration if they are not aggressively marketed by the life offices and their intermediaries. It is therefore important that life offices make these product changes and new products attractive to sell for their intermediaries.

ASISA produces regular studies on the insurance gap in South Africa, the latest being for 2013.38 The insurance gap is defined as “the difference between the insurance need and the actual cover” of South Africans. The insurance need is defined as “the amount of cover required to meet the need that is created by death and disability events”. The researchers assumed that “the household maintains its current living standards after the death/disability of the earner”. The total insurance gap for death (not disability) cover estimated in the study amounted to R9.3trn in 2013. The study divides results between five quintiles based on income level. The top quintile relates to individuals with annual income greater than R111 000, the majority of which would likely be part of the SA life offices’ middle and affluent markets. The bottom 4 quintiles relate to individuals who would likely be part of life offices’ entry-level market or would not qualify for insurance at all.

Almost half of the R9.3trn gap (R4.3trn) relates to individuals in the bottom four quintiles of annual income (<R111 000 p.a.). For the bottom four quintiles, the gap in terms of monthly income is an average of R2 280, which amounts to an average of 55% of monthly income. According to the study, the cost of closing the gap in the bottom four quartiles of income level would be between 2.8% and 4.7% of income.

In Section 4.3 we considered the increased sums assured that could be possible on our portfolio of entry-level policies under different mortality and lapse assumptions. We illustrated that with an unchanged lapse assumption, under our Baseline mortality assumption (which is based on the current policy of the DoH to roll-out ART to individuals with CD4 count under 350 cells/μl), sum assured could increase by 29%. If, in addition, lapses were to decline by 20% at all durations, the increase in sum assured could be as much as 49%.

We have done an analysis on what could happen to the insurance gap at the

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38 The South African insurance gap in 2013, November 2013: ASISA
bottom-end of the market in SA in an improved mortality and lapse environment. We have made a number of simplifying assumptions for our rough calculation:

— The bottom four quintiles in the insurance gap study have similar mortality characteristics to the model portfolio of new business policies used in our calculations;
— The cover provided to the bottom four quintiles in the insurance gap study is exclusively in the form of funeral policies, similar to those modelled in our calculations;
— An increase in projected sum assured on our portfolio translates to a similar increase cover for the bottom four quintiles of the insurance gap study; and
— An increase in sum assured does not translate into a reduction in number of products purchased – premium remains unchanged.

Table 10 highlights the results from our calculations. The first section shows the gap based on the 2013 gap study for the bottom four quintiles. As discussed above, the average gap as a percentage of income for the bottom four quintiles is 55% with average cover of R22 152. Under the our Baseline mortality assumption, we have allowed for the average cover to increase by 29%, in line with the potential increase in sum assured as per our results in Section 4.3. In this scenario, we estimate that the insurance gap for these four quintiles could reduce from 55% to 42%.

Table 10 Potential reduction in insurance gap under alternative mortality and lapse scenarios

<table>
<thead>
<tr>
<th>Rm p.a.</th>
<th>2013 Insurance Gap Study</th>
<th>Baseline mortality</th>
<th>Baseline with 20% lower lapses</th>
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<td></td>
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<td>Gap</td>
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<td>5 724</td>
<td>3 276</td>
</tr>
<tr>
<td>Quintile 2</td>
<td>26 000</td>
<td>9 452</td>
<td>16 548</td>
</tr>
<tr>
<td>Quintile 3</td>
<td>52 000</td>
<td>19 564</td>
<td>32 436</td>
</tr>
<tr>
<td>Quintile 4</td>
<td>111 000</td>
<td>53 868</td>
<td>57 132</td>
</tr>
<tr>
<td>Average</td>
<td>49 500</td>
<td>22 152</td>
<td>27 348</td>
</tr>
</tbody>
</table>

Source: ASISA 2013 Insurance Gap Study; Modelling by researchers

We have also considered the potential impact on insurance gap of reduced lapses and as a result, we tested the impact of 20% lower lapses across all durations on top of the improved Baseline mortality scenario. In this case, we allowed for cover in the bottom four quintiles to increase by 49%, in line with the sum assured increase in Section 4.3 under the same scenario. The result is for the average insurance gap in the bottom four quintiles to reduce to 33%.

We recognise that the above results are based on simplifying assumptions and that a number of developments could moderate the impact of the scenarios that we
model. Increase in total sum assured may not be high as we allowed for above if some policyholders decide to take the benefit in the form of reduced premiums (for the same sum assured) instead of increasing their sum assured to the full extent possible. Higher sums assured could (at least temporarily) increase lapse rates in the entry-level space as individuals switch from current to more attractive newer policies.

However, we believe that the introduction of new generation policies, including policies with more aggressive cash-backs, policies with surrender values and policies with premium waiver benefits could counter negative lapse risk and reduced demand risks.

5.3 A Case for Improved Persistency in the Entry-level Market

One of the most important, if not the most important issue in the entry-level market in SA is persistency. Lapses on entry-level policies, especially funeral policies have typically been much higher than in the rest of the insurance market and it has been a key determinant of profitability in terms of new business margins, IFRS profit and EV profit. Lapse rates on funeral policies can be twice the rate on life policies in the middle and upper income market. For assistance business the average individual lapse rate for in-force business over the three years ending December 2013 was 17.3%, compared to the corresponding figure for typical insurers of 7.7%.  

The above observed lapse rate for assistance business appears consistent with our new business model lapses.

There are various reasons put forward for such high lapse/surrender rates, including:

— **Affordability** (often as a result of job insecurity) – when clients face financial constraint, they are often forced to lapse policies;

— **Aggressive marketing** new policies replace old policies that are lapsed;

— **Re-pricing of premiums** new policies replace existing policies; and

— **Lack of surrender value or cash-back on policy** there is no additional incentive for policyholders to maintain their policies.

We believe that at least two of the concerns above could be addressed in a more aggressive mortality environment where there is a reduced risk of AIDS, namely affordability and lack of surrender value or cash-back. The potential exists in an improved mortality environment that premiums could be re-priced to reflect improved experience, hence increasing affordability. Although this has the risk of reducing persistency initially as policies are lapsed and replaced with cheaper cover if existing premiums are not adjusted, the lower premiums on the new policies could increase affordability and reduce the lapse risk during times of financial need. It is also possible that enhancement to policy benefits or the conversion of policies could reduce

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39 FSB Quarterly report on the results of the long-term insurance industry for the period ended 31 December 2013
this risk. The researchers recognise that in an environment where new policies are sold on better terms than existing policies, lapse risk could increase substantially. As a result, we regard it as very important that those life offices that take advantage of the improving mortality environment and develop new and exciting products, also take the time to improve the terms on their existing books of business to avoid this risk.

We believe that in an improved mortality environment, there may be the potential for larger numbers of policies with surrender values or cash-backs being sold. It is our opinion that the existence of surrender values or cash-backs could increase persistency in these blocks of business.

We have already illustrated in Sections 4.4, 4.5 and 4.6 that improved persistency could have a very positive impact on both policies with cash-backs, policies with surrender values and policies with premium waivers. At the same time, it is our opinion that the offering of such benefits could in turn have a positive impact on persistency. There is therefore the potential that the introduction of such policies could lead to a cycle of positive reinforcement where persistency improves and benefits are enhanced until persistency rates move closer to the rates seen in the traditional life assurance market in SA.

In addition, we investigated the potential of offering premium holidays in Section 4.7, which could have a very positive impact on persistency as it would take many more missed premiums before a policy lapses.

5.4 A Case for Increased Savings in the Entry-level Market

The entry-level space in South Africa is dominated by risk policies, especially funeral policies with limited sales of savings products. The reasons for this state of affairs are a combination of lack of demand, lack of supply/marketing of products, lack of disposable income and poor value for money.

We believe that in an improving mortality environment where there is a reduced risk of AIDS, many of the concerns above could be addressed, paving a way for an increase in this type of product.

There are a number of mechanisms that could increase the demand and usage of savings products in the entry-level space in SA, including:

— Premium reductions of funeral policies could increase disposable income, freeing up more money for investment in savings products;
— Cash-backs could provide individuals with windfalls that could be reinvested into savings products, especially if life companies offer reduced charges compared to stand-alone saving policies;
— Providing surrender values on funeral products could provide these products with a savings element, which could be utilised when the policyholder is in financial difficulty or has a reduced need for life cover;
— Premium waivers at retirement age, could free up income to be spent in different ways by policyholders; and
— Reductions in lapses could increase the value created within entry-level policies
and to the extent that this is passed to policyholders, allowing such money to add to saving or consumption.

Our calculations in Section 4.3 have illustrated that premium rates could be as much as 11% lower under the more aggressive mortality assumptions of our Baseline scenario, assuming no changes in lapses. We estimate that the entry-level new business recurring premiums in the SA insurance industry was between R9bn and R10bn during 2013, whilst the total entry-level recurring premiums for the industry is estimated at between R19bn and R21bn during the same period. If premium reductions of 11% were to materialise in the SA entry-level market over time in line with our runs, this could imply the freeing up of between R0.9bn and R2.1bn in premiums per annum (assuming no change in lapse profile). According to the latest SARB Quarterly Bulletin, the gross savings rate for households in 2013 was only R56bn with net savings being marginally negative. A boost of savings of only R0.5bn p.a. would turn household net savings positive, while boosting gross household savings by 9%.

In section 5.3.1, we illustrated an alternative transfer of improved mortality experience to policyholders under our more aggressive mortality assumptions. One of the methods we discussed was cash-back policies. We illustrated that on our portfolio of new business policies, with an average office premium of R2 376 p.a., cash-backs of between R2 574 and R4 158 could be released on a per policy basis every five years, with the higher releases being dependent on improved persistency. We also illustrated in this section that such cash-backs could be reinvested in savings products with reduced reduction in yield.

In the same section, we also considered funeral policies with surrender values and illustrated that surrender values of between 30% and 56% of premiums could vest, depending on improvement in mortality and lapse experience. Using our estimate of total entry-level recurring premiums of between R19bn and R21bn and a 40% surrender value level, this implies a boost to savings within these policies of between R7.5bn and R8.5bn over time, which could be meaningful (more than 15% of the current level of household gross savings).

5.5 Entry-Level Space could remain an Important Driver for SA Insurers

Over the past five years, the entry-level space in SA has been one of the major areas of growth for the insurance industry and individual players. We estimate that the proportion of new recurring premiums from the entry-level space has increased from around 40% to over 45% over the past five years, with more than 50% of value of new business now coming from this source for the major players.

We believe that in an improving mortality environment as a result of the more aggressive roll-out of ART (as we forecast under our Baseline scenario), this trend could continue over coming years. As discussed in previous sections, we believe that

40 Company financial statements, 2010–2013
there is strong potential for penetration to increase in the entry-level space, which could help to boost growth rates for SA life offices from this source. With the help of new and innovative product design, we believe that there is the potential for persistency to improve in the entry-level space over time as well as increased exposure to savings products. As a result of the improving mortality environment that we forecast and the potential for improved persistency, we believe that healthy growth rates in the entry-level space can be sustained for SA life assurers without the sacrifice of new business margins. As a result, we believe that SA life offices could also benefit from healthy earnings and VIF growth from the entry-level market over coming years.

In addition to benefiting SA life offices, it is our opinion that the improving mortality environment that we have highlighted in this research has the potential of changing the life assurance market for individuals falling in the entry-level space. We see the potential for such individuals to receive greater cover, better value for money and exposure to a wider variety of products. The positive impacts on life offices and their clients are also expected to have a positive impact on SA as a whole, through for example the potential for higher savings, higher consumption and less financial hardship due to the death of bread winners.

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ANNEXURE A – ASSUMPTIONS FOR MODEL PORTFOLIO

Mortality assumptions
Our mortality tables have been based on the THEMBISA model discussed before and we highlight selected qx's alongside.

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</tbody>
</table>
Economic assumptions
Economic assumptions have been set with reference to public information, our questionnaire, further discussions and researcher discretion:
— Interest rate Risk free rate (JSE zero coupon yield curve);
— Inflation rate Inflation curve derived from JSE nominal and real curves; and
— Risk discount rate Risk free rate +2.5%.

Other assumptions
Our other assumptions have been based on publicly available information, answers to our questionnaires, further discussions with life offices and the discretion of the researchers.

The table below summarises the lapse assumptions:

<table>
<thead>
<tr>
<th>Duration</th>
<th>Lapse rate p.a.</th>
</tr>
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<tbody>
<tr>
<td>Year 1</td>
<td>35%</td>
</tr>
<tr>
<td>Year 2</td>
<td>24%</td>
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<tr>
<td>Year 3</td>
<td>15%</td>
</tr>
<tr>
<td>Year 4</td>
<td>10%</td>
</tr>
<tr>
<td>Year 5+</td>
<td>10%</td>
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</table>

The table below summarises the expense assumptions:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Initial expense</td>
<td>R900 per policy</td>
</tr>
<tr>
<td>Renewal expense</td>
<td>R200 p.a. per policy</td>
</tr>
<tr>
<td>Claims expense</td>
<td>R500 per claim</td>
</tr>
</tbody>
</table>

Other assumptions are as follows:
— Commission Maximum regulated commission paid upfront (with clawback)
— Cost of capital 10% of the present value of future profits
— Discretionary margins None
— % of premiums not received (due to premium holidays) 10%

Policy set
For our policy set, we have used feedback from our questionnaires and additional discussions with life offices. We have taken account of the age, gender and sum assured distributions provided to us by the different life offices to derive typical picture that is not representative of a single company.

The characteristics of the modelpoints are summarised below.
### Average age

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Main member</td>
<td>40.3</td>
</tr>
<tr>
<td>Spouse</td>
<td>41.3</td>
</tr>
<tr>
<td>Children</td>
<td>11.4</td>
</tr>
<tr>
<td>Parents</td>
<td>62.9</td>
</tr>
<tr>
<td>Extended Family</td>
<td>30.3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Average sum assured</th>
<th>R17 750</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average premium</td>
<td>R2 160</td>
</tr>
<tr>
<td>Male / female ratio</td>
<td>50%</td>
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</tbody>
</table>

### Dependant ratio (dependants per main member)

<table>
<thead>
<tr>
<th>Dependant</th>
<th>Ratio</th>
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<tr>
<td>Spouse</td>
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<tr>
<td>Children</td>
<td>0.85</td>
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<tr>
<td>Parents</td>
<td>0.25</td>
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<tr>
<td>Extended Family</td>
<td>0.9</td>
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</tbody>
</table>

Figure A1 shows the age distribution profile, separately for males and females. Figure A2 shows the sum assured distribution profile.
Figure A2 Sum assured distribution

- 0.00% to 5.00%
- 5.00% to 10.00%
- 10.00% to 15.00%
- 15.00% to 20.00%
- 20.00% to 25.00%
- 25.00% to 30.00%
- 30.00% to 35.00%
- 35.00% to 40.00%
- 40.00% to 45.00%

- R 5 000
- R 10 000
- R 20 000
- R 30 000

Sum assured
ANNEXURE B – GLOSSARY

ART Antiretroviral treatment
ASSA2008 ASSA AIDS and Demographic Model
Baseline scenario Mortality scenario derived from THEMBISA based on the current Government policy, which provides ARTs to all adults who have a CD4 count of 350 cells/μl
Cash-backs Regular amounts returned to policyholders upon reaching predetermined policy anniversaries
CD4 <500 scenario Mortality scenario derived from THEMBISA based on the proposed Government policy (starting in January 2015), which allows for ART roll-out to be expanded to include all adults with CD4 count of 500 cells/μl
CD4 count Number of CD4 cell present in a blood sample, measured in cells/μl
Conservative scenario Mortality scenario derived from THEMBISA, which is our estimate of the current basis being used by the SA life insurance industry for pricing and reserving
Death rate Number of deaths as a proportion of population
DoH SA Department of Health
Entry-level policies Policies with low sums assured, typically non-underwritten and mostly funeral products
EV Embedded value
Insurance gap The difference between the insurance need and the actual cover of South Africans
New business margin VNB/PVNBP
NSP National Strategic Plan
PMTCT Prevention of Mother to Child Transmission
Post-sale underwriting Offering enhanced benefits to policyholders that exhibit better mortality experience than had been priced for in the original contract
PVNBP Present value of new business premiums
Quintile One of five equal subdivisions of a data set, in the case of the insurance gap, based on income level
RIY Reduction in Yield
RMS Rapid Mortality Surveillance (RMS) Report
THEMBISA Integrated demographic and epidemiological model of the SA HIV/AIDS epidemic
VIF Value of in-force business
VNB Value of new business